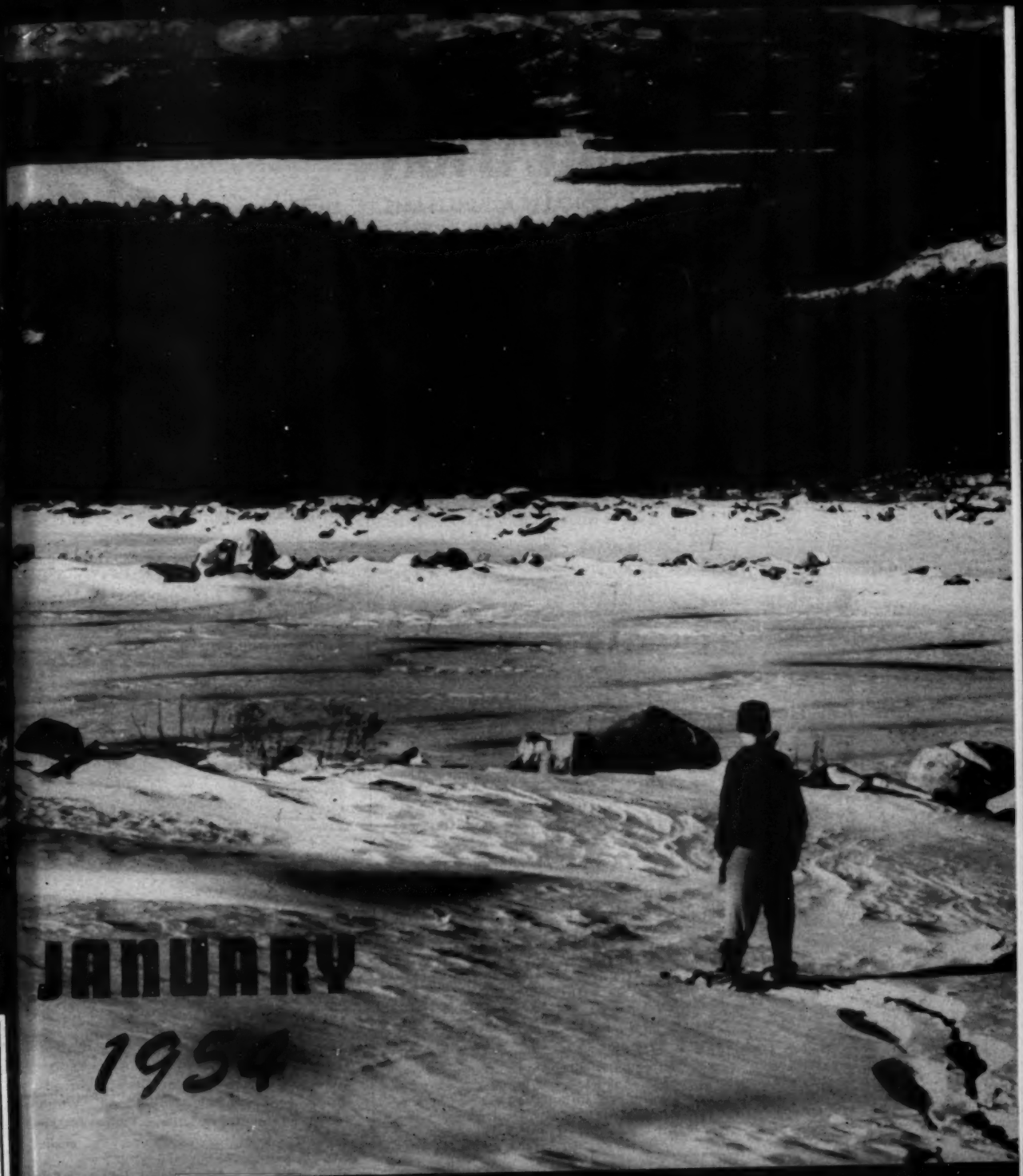

SOIL CONSERVATION

OFFICIAL ORGAN OF THE SOIL CONSERVATION SERVICE

SOIL CONSERVATION •

JANUARY 1954
VOL. XIX—NO. 6

EZRA TAFT BENSON
SECRETARY OF AGRICULTURE

DONALD A. WILLIAMS
ADMINISTRATOR, SOIL CONSERVATION SERVICE

ISSUED BY SOIL CONSERVATION SERVICE
U. S. DEPARTMENT OF AGRICULTURE, WASHINGTON, D. C.

★ THIS MONTH ★

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WELLINGTON BRINK
Editor

SOIL CONSERVATION is published by direction of the Secretary of Agriculture as administrative information required for proper transaction of the public business, under approval (August 6, 1951) of the Director of the Budget. SOIL CONSERVATION supplies information for workers of the Department of Agriculture and others engaged in soil conservation.

15 CENTS PER COPY

$1.25 PER YEAR

FOREIGN—$1.75 PER YEAR

25 percent discount on orders of 100 or more subscriptions mailed to a single address

DATES.—Are you interested in a date? Many persons are. As people and organizations grow older, debates about dates become keener. Since soil conservation has grown up—come of age, so to speak—conflicting claims relating to the first soil conservation erosion control demonstration project to be established spring up with surprising regularity.

SOIL CONSERVATION Magazine was an innocent victim of such a debate. The November 1953 issue reported the activity of the Georgia Historical Commission in placing a historical marker to commemorate the establishment of the first demonstration project in Sandy Creek, Ga. Another story in the same issue, by Lewis C. French of the *Milwaukee Journal*, reported the celebration of the establishment of the first demonstration project in Coon Valley, Wis.

Obviously, both these reports could not be correct. Documented evidence has now been supplied that Coon Valley, Wis., was, without a doubt, the site of the first dem-

(Continued on page 125)

FRONT COVER.—Winter on a north woods farm, Lake Winnepesauke and White Mountains in the distance. Young Joseph Fletcher, Concord, snowshoes in rock-cleared pasture of Smiling Hill Farm, cooperator with Belknap County Soil Conservation District, N. H. Photographer: Gordon S. Smith.

All orders go to the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

FLASH . . .
DON WILLIAMS COMES HOME!

Donald A. Williams.

Confirmation of the appointment of Donald A. Williams as administrator of the Soil Conservation Service and designation of Gladwin E. Young as deputy administrator was announced November 27 by Secretary of Agriculture Ezra Taft Benson.

Since November 2, effective date of USDA reorganization, Williams had served in an acting capacity. For some months previously, he had been in charge of the Agricultural Conservation Program, on loan from his post as assistant chief of the Service.

The newly-designated deputy administrator comes from the office of Assistant Secretary of Agriculture J. Earl Coke where he has been handling flood prevention and watershed work. For a number of years Young was in the Bureau of Agricultural Economics and until recently he was the USDA representative on the Missouri Basin Inter-Agency Committee.

The new developments will receive more extensive coverage in the next issue of SOIL CONSERVATION Magazine.

It's More than "Crop Insurance!"

By T. H. QUACKENBUSH

DROUGHTS long have plagued the so-called "humid area" of the Eastern United States. The years 1951, 1952 and 1953, produced severe and widespread droughts. Farmers clamored for sprinkler irrigation systems to save their crops. Many of them purchased systems that were not specifically designed to fit their farms—makeshift systems put together to meet an emergency. In many cases they saved crops and to large extent paid for themselves in one year. In other instances, systems were purchased only to find out that the farm pond didn't hold enough water for irrigation.

Large investments were made in irrigation systems that with reasonable maintenance should last at least 20 years. What about the 15 to 18 years in between the droughts?

"I have my irrigation system in the barn; when it gets dry, I will irrigate and save my crop," is the typical answer of many farmers.

"I have crop insurance now; when it dries up I can pour on the water," is another common remark.

Certainly, such a farmer has "crop insurance." But he also has a lot more. Through the proper use of his irrigation system he can *control the moisture in the soil.* Not only can the disastrous effects of severe droughts be eliminated, but crops can be produced each year under optimum moisture conditions. This means greater yields and better quality.

Several studies of rainfall records have revealed that periods of moisture deficiency occur in the humid areas much more frequently than is usually recognized. This means that nearly every year there may be one or more times when plants suffer to some degree from lack of moisture. A deficiency is not always revealed in the appearance of the plants, but it does often affect production and quality. This sort of thing can be prevented if irrigation systems are properly used.

The farmer who stores his system in the barn, waiting for his plants to wilt, hoping for the rain that doesn't come, certainly loses his chance to gain the extra production and better crop quality that follows irrigation in accordance with the needs and capacity of the soil.

NOTE.—The author is irrigation specialist, Soil Conservation Service, Washington, D. C.

The farmer who has invested in an irrigation system and desires maximum returns on his investment must become an *irrigation farmer.* Irrigation farming certainly involves a lot more than putting on some water when the crops begin to wilt from lack of moisture.

An irrigation farmer who wants maximum returns from his irrigation system should consider the following items—

(1) Types and varieties of crops grown: Are the crops that will pay best under irrigation now being raised? Do I have enough varieties so that not all crops require water at the same time? Now that I have adequate moisture, can I increase the plant population and thus increase yields?

(2) Soil fertility: Have I built up the fertility of my soil so it will produce maximum yields under irrigation? (Good fertile soils will pay better under irrigation than poor depleted soils.) Have I planned for additional fertility measures that will be required since yields will be greater? Are my rotations adequate to maintain fertility?

(3) Soil and water conservation: Have I completed all necessary conservation measures to hold my soil in place and utilize all of the rainfall that I can? (It is cheaper to hold an inch of rainfall on the land than to pump an inch through a sprinkler system.) Is my soil properly drained? Will my drainage system adequately handle the extra load that may be brought about by adding irrigation water just prior to a heavy rain? (Crops that get a late start in the spring and are partially drowned out by early moisture will not give maximum yields under irrigation.)

(4) Irrigation water management: Do I know how much water my soil will hold? Do I know when to irrigate? (Plants will show stress even prior to reaching the wilting point. If you wait that long to start irrigation *it is too late.)* Do I know how much water to put on? (Plants with different root depths may require different amounts of water.) Do I know how fast to apply the water?

(5) Labor requirements: If the irrigation farming is done right *it is work!* Should I plan to operate 24 hours a day or only 8 hours? (Remember, it takes a system three times as big to do the job in 8 hours as would be required for 24-hour operation.) Do my movement schedules fit into my other farming operations? Will I need to hire additional help?

(6) Retirement of poor land from cultivation: Now that I can increase the yields from my better land, how about retiring that poor land that should be in grass?

These are only a part of the questions that will confront the irrigation farmer in humid areas. Consult your local soil conservation district to get help in planning your irrigation system.

Remember, irrigation, in order to succeed must be an integral part of a conservation farm plan. It may necessitate several changes in present farming operations. Know what these changes are going to be before you purchase. Heed the trite but sensible warning of those who are concerned with the success of irrigation in humid areas: Investigate before you invest!

DATES

(Continued from page 122)

onstration project to be established by the Soil Erosion Service (later the Soil Conservation Service). The annual report of the Secretary of the Interior for the fiscal year ended June 30, 1934, states that the Coon Creek demonstration project in Coon Valley, Wis., was the first of these projects to be established and lists it as *Project No. 1.* Also, photostatic copies of payrolls and personnel appointment records show that Ray H. Davis was appointed as regional director for the Coon Valley project on October 10, 1933. Other records indicate actual work in Coon Valley was started in November 1933.

The date of the establishment of the Sandy Creek, Ga., project according to records available in Washington, D. C., was April 2, 1934, when Loy E. Rast was appointed regional director of the project with headquarters at Athens, Ga. Sandy Creek, Ga., was listed as Project No. 19, so the records seem to uphold Coon Valley's claim to being the first erosion control demonstration project established in the United States.

—A. M. Hedge

EVERYONE CAN HELP.—The Betsie and Platte Watersheds Improvement Project was organized about a year ago, under the sponsorship of the Benzie (Mich.) Soil Conservation District. Closely cooperating were the Grand Traverse Soil Conservation District and the Manistee Soil Conservation District. Many clubs, civic organizations and government agencies assisted in setting up the project.

A large portion of the two watersheds is forest, resort or recreational land; the "summer people"—part-time residents, hunters, fishermen, and vacationists—are enthusiastic about this work. For example, Frank M. Phillipps, who owns a summer cottage on the Betsie River, volunteered his services in art and advertising to get out a high-quality folder on a demonstration day held last summer. This will be useful for distribution for years to come.

—Arvid Tesaker

"Greening Up" a Utah Ranch

District honors four brothers for their pioneer achievements in conservation and improvement of range land.

By EARL SPENDLOVE

IN THE spring of 1953, one of the driest in the history of the State, the Heaton Brothers of Alton, Utah, grazed 900 head of sheep for about 2 weeks on 200 acres of land. It was land that only a few years ago was producing practically nothing for feeding livestock.

The brothers—Vard, Gail, Lloyd and Ross—operate a sheep and cattle set-up on private, public, and forest lands in southern Utah and northern Arizona. They are convinced that if they had started their present range seeding and management program 10 years ago, they wouldn't have to worry about feed even in the depths of drought.

Under the Heaton system, the cattle winter on public and private lands in the "Arizona Strip"—that portion of Arizona which lies between the Colorado River and the Utah state line. Summers are spent in the Dixie National Forest in southern Utah. In the spring and fall, the stock are run on privately-owned land in the vicinity of Alton. This latter range, like most spring-fall ranges, has suffered because grazing usually begins just as the plants start to "green-up" and continues until the soil is so dry that the plants make little or no growth after the stock has been moved to the higher ranges.

As a result of this too early, too long, and too heavy use, the better plants had been killed out and replaced by undesirable species when the brothers took over the ranch about 15 years ago. Land that once produced considerable grass was covered with piñon, juniper and sagebrush. On it grew only a fraction of the feed it was capable of producing.

"If we could have sold the ranch and bought land somewhere else, I guess it would have paid," said Vard. "But no one wanted the ranch. We were stuck with it. So we decided to do what we could to improve it."

NOTE.—The author is with the Soil Conservation Service, Kanab, Utah.

Ross explains that stock prefer smooth brome to crested wheatgrass. In background is a windrow of piñon and juniper.

The Heatons knew that the ranges had been overstocked. They acquired more land to reduce the stocking.

The bottom of practically every drainage had a deep gully, so they put in rock and brush and earthen dams to hold back some of the silt.

The spring-fall range was practically devoid of grass, so they purchased seed and scattered it from horseback as they worked with the stock. No attempt was made to cover the seed and very little of it ever came up. The few seedlings that did come had to compete with the already established browse and weeds for moisture, and, since the area was unprotected, had to be able to withstand grazing and trampling by livestock. Needless to say, this first attempt at range seeding was somewhat discouraging.

During the next few years, the Heaton brothers did no further seeding. But they did read a great

deal on range matters. And they worked out a conservation plan with the Kane County Soil Conservation District. This plan called for clearing the land before it was seeded and for protecting it from grazing until the grass could become established.

In the fall of 1949 it was decided to try another grass seeding. The area selected was just south of the town of Alton. Here the elevation is 7,000 feet and the annual rainfall 17 inches. The heavy clay soil supported a thick stand of piñon and juniper with practically no vegetation under the trees. This was definitely not one of the better sites. It was fenced, however. A bulldozer pushed the piñon and juniper into windrows. Part of the land was plowed, and a mixture of smooth brome, crested and western wheatgrass broadcast and worked into the surface by harrow. On the rest of the land the seed was drilled. Seeding was done late in the fall, to take advantage of the melting snows and early warmth of spring.

In that summer of 1950 the land that had been seeded came up to a thick stand of annual weeds. The Heatons seriously considered plowing and replanting. On closer examination, however, they saw a lot of grass starting to grow down there in the weeds; there was a better stand on the land that had been plowed than on that which had not.

The success of the 1949 planting started the Heatons' grass-seeding program. Every year since then they have cleared and seeded from 50 to 100 additional acres. All seedings are with a drill, and the original mixture has undergone some variation. Western wheatgrass, a slow starter and not too palatable, is omitted; yellow blossomed sweetclover has been added. In the later plantings, tall, intermediate, and stiff-hair wheatgrass is included.

All plantings receive complete protection for at least one, and generally two, growing seasons—and conservative use after that.

In some instances the Heatons did not get a thoroughly satisfactory stand on land which had been farmed several years prior to planting grass. They attribute this to the fact that the crops had removed considerable fertility and soil moisture, which may make it necessary to rebuild by summer fallowing.

The stock seems to prefer the brome ,intermediate and stiff-hair wheatgrasses to the tall and crested wheatgrasses. This precipitates a management problem, because the animals tend to overgraze the more palatable species before they start on the

Gail, center, explains seeding methods, mixtures, and costs to group of fellow ranchers.

others. To meet this problem the Heatons watch the favored grasses and stop grazing when they're about half gone.

Until the spring of 1953, the clover in the mixtures was not a problem. By the time the sheep were moved onto it, the clover was mature sufficiently not to cause bloating. The cold, dry spring of 1953, however, held the clover back; it was starting when hungry sheep from the dry ranges of Arizona arrived. As a result, there was some loss caused by bloating. The Heatons, nevertheless, like clover in their plantings because it produces a lot of feed, and because the grasses seem to do better when growing with clover. To meet the bloat problem, it is planned to reduce the amount of clover in future plantings and to delay grazing until the clover has reached the proper stage of maturity.

Not only are the Heatons getting more feed from land seeded to grass, they have also increased the production of native plants on ranges where seeding is impractical. On the steep, rough, mountain ranges, the browse is vigorous and healthy and more native grass is showing up every year. On the Arizona ranges, the better grasses are definitely on the increase, and the difference between their range and the adjacent land shows up for miles along the fence line. This improvement of the native ranges has been brought about by selecting the plants that would produce the most and the best feed, and by managing these ranges to favor these plants.

Because of the work they have done in range seeding and range management, the supervisors of the Kane County Soil Conservation District selected the Heaton Brothers as the district's outstanding conservation ranchers of 1953. They represented the district at an area meeting of the Utah State Soil Conservation Districts Association, and were presented with an award for their work in conservation.

Although they have done more range seeding than anyone else in the county, they feel that they have only scratched the surface in conservation and improvement of range land.

County Farm's Soil Plan Pays Off

By JERRY KRIEGER

A couple of years ago we went out to Berrien County's county farm at Berrien Center, Mich., to see what a newly-instituted soil and water conservation plan was starting to do for the farm. It was just a year and a half after the program had been started, and already then big changes had taken place.

This fall, we went back again to see if the soil plan was panning out as well as expected and if it was paying off.

Probably the best answer was provided when Farm Manager Gail Peapples laid out copies of the annual financial reports on the farm, as prepared by the Berrien County Welfare Board.

The report covering the first fiscal year ending September 30, 1949—the year Peapples started as manager—showed the farm had made a net profit of $2,245.

The second year showed a net profit of $3,163, and the third year the figure was up to $5,218.

And in the year ending September 30, 1952 there was a net profit of $9,102.79.

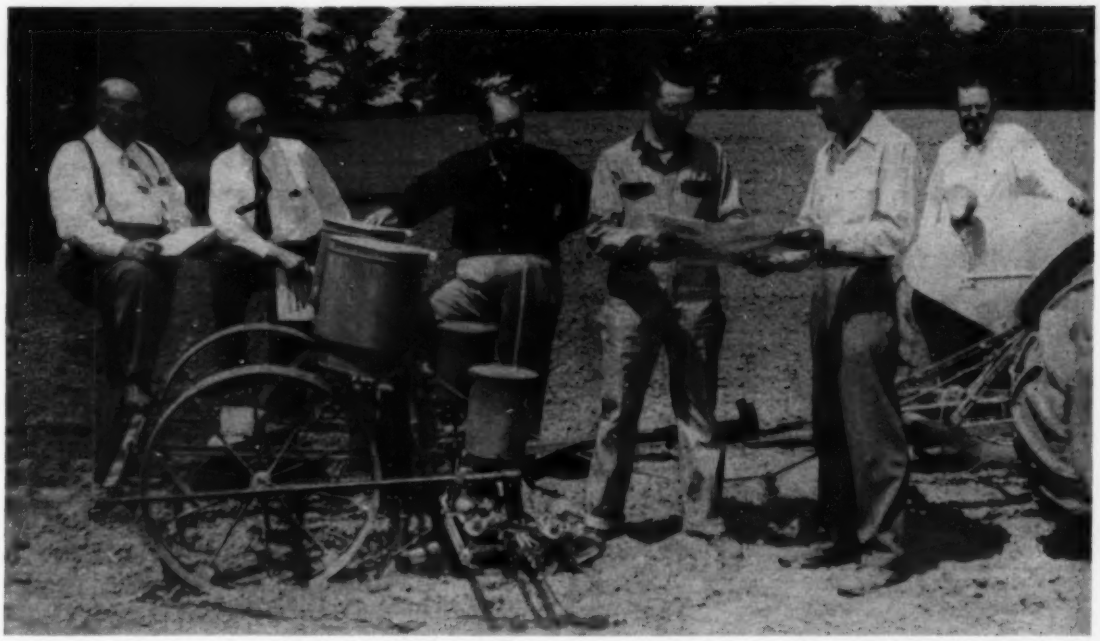
These figures all represent what was left after all expenses and wages were paid, and depreciation figured off.

In other words, the farm's profit has jumped over 300 percent since the first year the soil conservation plan was put into operation.

And before that, according to Harry Hogue of Eau Claire, a member of the county welfare board, the farm was doing well if it broke even.

These gains were made, too, despite the fact that Peapples has had to buy all new machinery for

Note.—The author is farm editor, *News Palladium*, Benton Harbor, and the *Herald Press*, St. Joseph, Mich.



Welfare board receives farm plan from district chairman: Left to right—Harry Hogue, banker and board chairman; John Warmen, welfare board secretary; Floyd Morley business man and member of welfare board; Gale Peapples, county farm manager; John Handy, chairman of St. Joe River Soil Conservation District; Joe Carver, automobile dealer and member of welfare board.

the 433-acre farm. All tools on the farm were horsedrawn when Peapples arrived, and up until just this year he has bought about as much machinery each season as the budget would stand. Now the farm is well equipped and machinery expenses will decline to just replacement needs.

In addition to the financial statements, other signs are visible all over the two separate tracts that make up the farm to show what big changes have taken place on the county farm.

The dairy barn and milkhouse are spotlessly clean. The herd of registered Holstein cattle is sleek and fat. And Peapples and his herd manager, Earl Daniels, are hoping to win the North Berrien DHIA's trophy this year for the herd showing the biggest increase in butterfat. Two months ago the county farm herd had the highest butterfat average of any of the large herds in the testing association for the month of May.

Early this summer, a 27-acre field of red clover yielded 95 tons of hay in the first cutting. That's slightly over 3½ tons per acre. An average yield for most farms is 2 to 2½ tons per acre.

The wheat yielded 38 bushels to the acre this year—not as high as some farmers got this season but a yield that doesn't require any apologies in this area. Last year it ran 40 bushels.

The farm now provides all the food used in the county hospital and the infirmary, except for a few specialty items such as lettuce and the like. Last year the farm filled the meat needs in both institutions with 47 beeves and 98 hogs.

Before the soil plan was instituted—in 1948—the farm furnished only 17 beeves and 34 hogs for the hospital and infirmary. And the farm then couldn't produce even enough feed and grain to carry an average of about 75 head of dairy and beef cattle. Now the two herds run between 110 and 120 head the year around and every bit of feed is produced on the farm, except commercial concentrates.

CARDS SIMPLIFY WORK.—The Marathon County (Wis.) Soil Conservation District, distributes printed "request-for-service" postcards at meetings. Last year 60 percent of the layout work resulted from the cards. This year about 90 percent of the work is expected to be scheduled from the cards. A dozen soil conservation practices on which field services may be desired, are listed. There is also a space for indicating the kind of machinery that will be available at the farm on a specified date.

The Lake that is Here to Stay

A modern city—Shawnee, Okla.—stops erosion on land bordering reservoir and helps speed conservation throughout watershed. Good water, good fun, and good revenues are the result.

By LESTER FOX

MUNICIPAL officials can avoid headaches and save money by understanding rural land problems.

This is especially true of the kind of costly reservoirs which many cities have built in the past 35 or 40 years. Numbers of such reservoirs have been abandoned, superseded by newer and bigger ones because inadequate attention was given to Nature's fundamental laws.

Shawnee, Okla., had an interesting experience from which much can be learned.

This modern city built its $800,000 Shawnee Lake in 1936 to provide an adequate supply of water and to establish a scenic center for recreational activities. The lake was counted on to produce the revenue needed to finance most of the city's services.

But things didn't work out that way. With the first rain, the city's headache began. There was one thing that the city fathers had overlooked: soil erosion! The land in the 13,000-acre watershed was so badly eroded, including the city-owned 1,600-odd acres around the reservoir, that every time it rained, Oklahoma's red soil came washing down into the lake by the carload.

In 1947 the Soil Conservation Service made an exploratory survey which showed that because the lake had a large capacity in proportion to its drainage area, it was filling up with sediment at the low rate of only 25 hundredths of 1 per cent a year. That was favorable. But sandbars were forming where streams entered the lake and sediment was piling up at many points along the shore, leaving private boat landings high and dry.

What was particularly vexatious was that the red soil entering the lake remained mostly in suspension. That made the lake an ugly sight, and the task of filtering the water a difficult and costly operation.

So, instead of getting the extra revenue expected, the city had to dig deeper into its funds with each passing year for chemicals and labor just to settle the red mud in the water at its filtration plant. And no matter how much the water was filtered, it was still discolored when it was piped to home and business.

The 1,300-acre lake itself was so repulsive because of its dirty red color that only a very few persons ever ventured to fish in it. Only a handful of the residents who leased the city's lake sites went

This is Bill Moran.

NOTE.—The author is in the information division, Soil Conservation Service, Fort Worth, Tex.

ahead with plans to build cabins. People weren't smiling when they referred to the lake as the "mud hole."

Late in 1950, the city began to apply modern conservation measures on its land around the lake. Seeing the benefit of such a program and wishing to cooperate with the city and the Shawnee Soil Conservation District, most of the farmers in the watershed have adopted or speeded up the application of their own conservation plans. The common aim was to stop erosion and increase the land's productiveness.

Now Shawnee Lake sparkles like a gem. Cabins, some of them beautiful summer homes, dot the shoreline. Thousands of people throng to the lake for recreation. The water piped to home and business is clear. The city again takes pride in its lake.

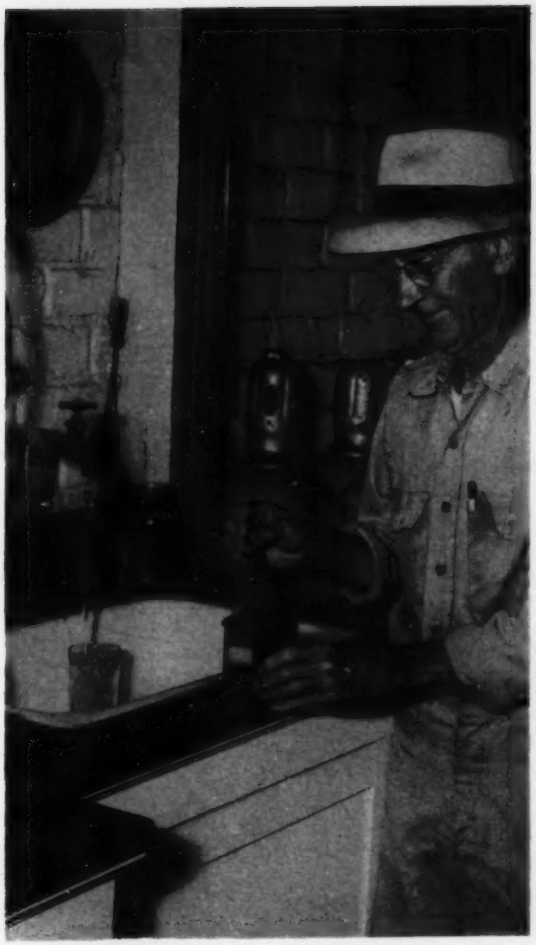
"We estimate that the conservation work is worth $15,000 a year," says Willard B. 'Bill' Moran, city manager. "Savings in costs, plus an increase in revenue resulting exclusively from greater use of the lake for recreational purposes, have enabled us to expand our municipal services, increase our personnel, and buy new additional equipment."

Savings exceeding $3,000 in the very first year after the conservation work was begun more than repaid the city's initial appropriation of $2,200 to start the program. Second-year savings far exceed the entire sum—$8,500—that the city has invested in its conservation project to date, including labor, equipment and materials.

Figures compiled for 1952 by Water Superintendent Lester Barngrover show savings in operating costs of $14,827.16. Revenue from use of the lake for recreation increased $3,283.50 in 1952 over the 1950 total. These two sums add up to $18,110.66. Deducting the 1952 cost of the conservation work, $3,125, leaves a net gain to the city of $14,985.66.

Cost of conservation work will go down soon when the program is completely installed and put on a maintenance basis. Savings and revenue, on the other hand, may continue to increase somewhat before a maximum is reached. Sale of grass seed harvested on its land will bring additional income.

In 1950, after years of mounting expenses due to increasing loads of silt, it cost the city $11,043.99 to purify and pump 582,918,000 gallons of water. In October of that year the city began its conservation program.



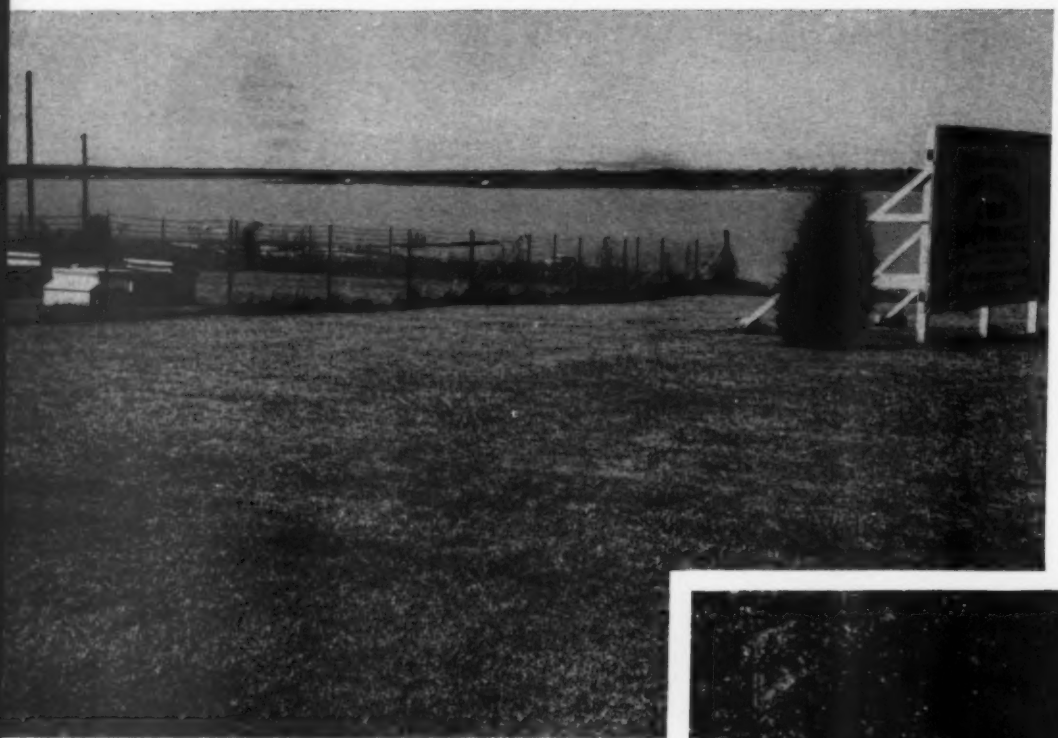
Tom McBride makes hourly tests.

In 1952 the city spent only $4,716.83 to purify and pump 693,551,000 gallons of water. Thus it cost $6,327.16 less to supply 110,633,000 gallons more than in 1950.

The amount of alum used at the filtration plant to settle the mud dropped from 269,900 pounds in 1950 to 53,600 in 1952, lime from 177,250 pounds in 1950 to 29,800 in 1951. Now another chemical has replaced *lime* at half the 1950 cost.

In addition to the $6,327.16 already noted, the city saved $8,500 in wages and water, making the year's total savings $14,827.16.

"Before we began our conservation work," Moran says, "we had to clean the large settling basins at our filtration plant four times a year, the water was so thick with silt. Every time we cleaned them



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Boat races, now h nnually
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In 1950 use of th e for r
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percent.

Only 3 years ag awnee's
taking a dim view e lake.
missioners were glu But Bil
hopeful. He had r in the

we lost 1,250,000 gallons of water that could have been pumped through our meters to the people of Shawnee. Now we clean the settling basins only once a year, saving 3,750,000 gallons of water.

We're saving half a million gallons a year in backwashing our filtering basins. As this is water that has been treated with chlorine, we also save the chemical.

"The time required for treating and filtering our water has been reduced about 25 percent. That amounts to the same thing as a 25 percent increase in the size of our plant. *In other words, we are now able to pump in any 24-hour period about 25 percent more water than was possible before.*

"Although we have more than a 2-year supply of water without additional rain, we consider water in storage of great value. We feel that we have an obligation to conserve all the water possible, for we have learned from the experience of other cities that the day may come when we will need all the water we have in storage. When it comes to water these days, every drop counts."

With the lake a scenic attraction, its use for recreation has increased tremendously. Every day five or six hundred persons enjoy its fishing. Last

(Continued on next page)

and fis permits were sold at lake
A co sionaire also sells fishing
10 pe of the take, pays the city
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ad n in the Soil Conservation

***Far left.*—Program protects and encourages wildlife; sign explains quail project (see pen at left) of Pottawatomie Sportsmen's Club. *Above.*—Caretaker sees if automatic quail feeder needs refilling; this one is on cabin grounds of Adam Hornbeck, business man and known nationally in sportsmen's circles. *Center.*—One of the attractive summer homes on the lake. *Below.*—Joe Mondonca and Danny Hinkle enjoy some good fishing.**

age)

Once an abandoned cottonfield, sending a lot of red soil down to the lake, this site now is covered with a thick stand of indiangrass, little bluestem, and switchgrass.

Service reconnaissance survey report that a coordinated soil conservation program applied in the watershed could reduce erosion by at least 50 percent.

Moran went into a huddle with the mayor, city commissioners, Water Superintendent Barngrover, a few civic-minded citizens and Roland E. Lee, head of the Shawnee office of the Soil Conservation Service.

Lee assured the group that the whole problem could be solved but only if the city were willing to enter into an agreement with the Shawnee Soil Conservation District to work out and apply an integrated conservation plan. The district, he explained, could provide help in its own right and obtain the assistance of SCS specialists.

"But," Lee cautioned, "we can't lick this thing over night and we can't get anywhere trying to do the job piecemeal." He had in mind the city's ineffective stabs at the problem in the past.

Everyone at the conference found new hope in Lee's assurance. The mayor and commissioners were enthusiastic. They quickly set aside funds to start the work, signed an agreement with the supervisors of the soil conservation district, and mapped out a comprehensive 5-year plan with the technicians.

The work started in October 1950. A little later, when they had a vacancy to fill, the commissioners pointed to Bill Moran and said, "You're our new city manager." To their surprise and relief, he took the job. Ever since he has vigorously pushed the conservation program with the full support of all the city officials, organizations and the public. In recognition of his outstanding service to Shawnee, the City Managers' Association of Oklahoma elected him their president in 1953.

Main part of the city's conservation program has been seeding the land to grass to give the soil a thick, protective covering. This blanket of grass protects the land against the force of rain that blasts barren soil loose and then washes it away. The long grass roots guide the rain deep into the soil, where it is stored and released slowly and evenly to keep the water in the lake at a stable level.

Now, for the most part, the rain that runs off the surface of the land is clear when it reaches the lake. As the conservation work progresses, this runoff will continue to decrease and will carry less and less sediment into the lake until siltation becomes negligible.

As part of the overall program, the city has built 79 desilting basins near the bases of gullies that

require a long time to heal. The sides of the gullies have been sloped and seeded to grass. Twelve miles of diversion terraces have been built above the gullies to keep water from pouring into them from higher ground.

The conservation program also serves to protect and encourage wildlife. Various sportsmen's groups cooperate directly in this phase of the project.

(Continued on page 142)

Russell and Betty Currie, farm kids, on an old boat landing. Sediment here is 10 feet deep, a grim reminder of what was happening before the conservation program was begun.

The desilting basins, actually small ponds, catch the runoff from the mending gullies. The sediment settles in the bottom of the basin. Above a certain level in the basin, the water flows over a grassed spillway that sifts the sediment out before it reaches the lake. By the time the basins fill up with sediment, in 8 or 10 years, the gullies will have completely healed under a thick robe of grass and there'll be no more washing of soil, Lee explains.

Firebreaks have been built all the way around the city-owned land, to protect grass and trees. Fire used to burn over the whole area every year, damaging what little protective covering the land had. The city has provided a fire truck at lake headquarters, and members of cooperating sportsmen's clubs stand ready to help put out any blaze that starts.

"Not more than a small patch has been burned over since we began our conservation work," says Moran.

Lester Barngrover, water superintendent.

Recurring Theme in Empire State

Farmer after farmer has found that there is only one sure way to success on the land—through adherence to a complete conservation plan. Good farmers, all, it took a soil conservation district and correct techniques to put them on a safe and profitable basis.

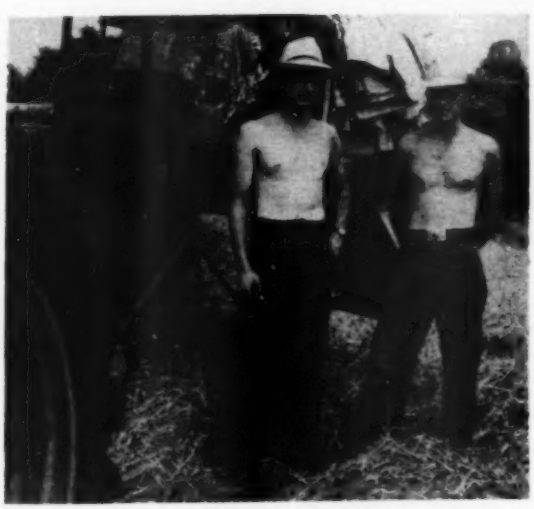
By HUGH F. EAMES

ACROSS the length and breadth of New York State agriculture, in which 26 thousand farmers with 3,600,000 acres are teamed together in 38 soil conservation districts, one common lesson has been learned.

George Comings, Bainbridge dairy farmer and breeder, is one of those who have found, often the hard way, that land is their one great asset and that they must use it right, and treat it right, if they are to make the most of it. Otherwise, they can destroy its productivity during their careers, to the vast loss of themselves and those who follow.

No matter what their chief enterprise may be, these farmers have found that the right type of

NOTE.—The author is in the information division, Soil Conservation Service, Upper Darby, Pa.



Brown brothers, Bob and Walt.

George Comings and his son, Philip.

Walter Buss and sons.

livestock, the best adapted strains and mixtures of grasses and legumes, and the right varieties of fruits and vegetables, are not enough in themselves. Fleets of modern labor-saving equipment, abundant use of sprays, lime, fertilizers, and other chemicals and manure, a long growing season and a fair break in weather will help, but not win the battle. All these farmers know that *success comes only when each acre of farm land is handled as carefully and skillfully as an animal being fitted for prize competition at a state fair.*

Mrs. Herbert Stolzenberg and sons, Herman and Carl.

George Higby, his son Albert (at right), and Albert's cousin, John Hill.

I've been to see 30 or more of these New York farmers within the past year. From my notes—all adding up to the same conclusion—I cite briefly here a few representative experiences.

For nearly 25 years, George Comings tried to become a successful breeder of dairy animals. He put almost all his time, effort and resources into work with the starting herd of three purebred Holsteins that he brought from Wisconsin. He left his eroded 160-acre hilly, hard-pan and water-drenched land pretty much on its own. Comings bought most of the feed he needed, and didn't get very far toward his goal.

In 1941, when he ran out of personal resources George sought the missing link in his enterprise. Through the newly formed Chenango County Soil Conservation District, he found that it was in *the use and treatment of his land.*

After 3 years of hard work under the program that the district helped him make, his enterprise began to click. *In the last 7 years he has annually won Progressive Breeders' Registry honors in recognition of achievement through an improved breeding program based on production, testing, type classification, and herd health for advancement of Holstein-Friesian cattle.*

What was a below average upland Chenango hill farm, has become one of the county's top-ranking dairy enterprises. George Comings tells you that his over-all success springs from using each acre according to its capabilities and treating each acre according to its needs.

Again—

Two young farmers, Bob and Walt Brown, who operate a 350-acre dairy farm at Tioga Center, are demonstrating how expenditures for feed for their herd of 41 milkers can be cut to a twelfth of their monthly milk check. This is unusual in an area where the average dairy farmer spends a third to a half of his milk check for feed.

The Browns have followed a complete conservation plan since 1950, in cooperation with the Tioga County Soil Conservation District. Diversions have been built, and stripcropping established. Forty acres of wasteland have been cleared, renovated and developed for top production of hay and

Ken Jenkins in driver's seat.

pasture, with the rest of the farm in other crops. The whole job cost only $600 in cash.

From one 8-acre tract, the Browns harvested 750 50-pound bales of hay this year. Second growth produced the equivalent of 500 more bales. Last year a 4-acre field yielded 800 bushels of ear corn. Two 65-ton silos are filled with corn. Nearly all the needed roughage and grain are home-produced. Fifty more milkers will be added to the herd when 30 more acres are cleared and put in production.

Another New York farmer, located at Alton, Mrs. Evalyn Gatchell, has made full use of the facilities of the Wayne County Soil Conservation District. As a result, her 165-acre Jim-Eva Farm includes diversions, contouring, drainage ditches, mulching, pond for spray water, and grassland improvement. *Her acres have been put to their best use.*

Drainage tile leads into a 350,000-gallon pond which, in turn, supplies water for spray. Improved grassland increases the production of hay for an extensive mulching program in the orchards; thus the need for buying nitrates is cut down. Mulching in some orchards is 18 inches deep. Mother of Wayne Home Bureau and a pioneer in Wayne Farm Bureau, Mrs. Gatchell has held executive posts in the State Farm Bureau and in other rural organizations.

Continuing the examples—

When Walter Buss, a veteran of the last World War, needed a small ditch to get his dairy cows out

John Kovac and grandchildren.

of the mud, he asked the Otsego County Soil Conservation District for some help. The technician working with the district, saw beyond the ditch to a whole broad program of contour strips, better pastures and other work, which Buss would have to have before he could make a go as a dairyman. The complete conservation plan that Buss is establishing on his 120 acres is the result. Fifty-one acres of good pasture, and grass-corn-oats rotations have been developed, and the herd has grown from 18 to 41 head.

In 1948 Buss bought hay to carry his small herd; now, with a higher number of animals, he has plenty of hay, pasture and silage, as well as good yields of oats and corn. The average milk production has soared. From a 3-acre patch of birdsfoot trefoil and timothy last year he harvested 460 60-pound bales in two cuttings.

Buss is one of about a hundred GIs in Otsego who now have a chance to make a real success farming because of modern techniques made available through the district.

In 1940 Charley Wood, a farmer of Alpine, tried out the conservation idea on a troublesome 4-acre hill field. He found the system so beneficial that, in cooperation with the Schuyler County Soil Conservation District, he has since put all of his 124-

Tom Utter and Leon Barkley, old hands at working together.

acre farm under a complete conservation plan and is giving four other farms that he has bought and one that he leases, the same treatment; altogether, about 500 acres of conservation farming.

From a start with 14 milkers in a 22-head herd, he has built to 55 head with 30 milkers, and will add 6 more to the group. On the small hillside area where he gave conservation practices their try-out, he has harvested 800 bales of hay a season. Where 1½ tons per acre previously was considered a good yield, he now gets 3. Wheat and oats production have doubled. Annually he puts up about 6,000 bales of hay and all the silage his herd will eat. *He says he has had a sevenfold return on cash invested in establishing conservation practices.* When he spends $1,000 more he will have the complete plan working for him.

While helping himself, Charley also has done a good turn for Schuyler taxpayers. In bygone years, after each hard storm, a highway crew worked several days shoveling topsoil washed from Charley's field out of road ditches. For 10 years now these workers haven't had that job to do.

Another instance—

When Herbert Stolzenberg, a New Jersey electrical worker, got caught by unemployment during the depression, he turned to farming for a career, though he had no experience in it.

He began at Gallupville, with a run-down 95-acre place. He had mighty tough going for 2 years. Then, with guidance from technicians from a CCC camp, and later from those with the Schoharie

Del Hammond and partner, Jerry Lovejoy.

County Soil Conservation District, he established a complete conservation plan in 2 years.

At the start, the Stolzenbergs had only two scrub cows for milk and butter needs at home. Their cash income came mainly from the sale of veal calves, and cream for butter. Since 1941 they have expanded the herd and shipped milk. They now have 28 head with 15 milkers, and plan to carry 50 with 23 milkers. Production runs about 11,000 pounds per cow per year. With a 70-ton silo full of corn, his pasture and hayland provide all the required roughage. All needed grain comes from home-grown wheat and oats.

Selective cutting of well-managed farm woodlots has produced timber for building five new farm buildings and repairing others. Black locust plantations in reforested areas yield all the sturdy fence posts needed. Since their father's death, two sons, Herman and Carl, are operating the farm with guidance of their mother. They do not intend to return to the city.

Another example—

In the midthirties, when his farm production was slipping steadily as a result of loss of topsoil, wearing down of fertility, and cutting of gullies, Stanley Peck, a farmer of Avoca, turned for relief to technicians at the USDA conservation farming demonstration project at Bath.

Peck established his first diversions and contour strips in 1936 and 1937, and began at once to get the production he urgently needed. That's why he has bought three other farms, where he is establishing similar conservation practices as rapidly as time and means permit. Now he has 140 acres in contour strips, 7,800 feet of diversions, and 600 feet of outlets. All his land is protected against the storms which once caused havoc.

Stan has milk production from 22 cows in a 37-head herd. He has 80 acres in potatoes, 60 in grain, and 100 in grass. Corn goes into silage and, with the grass and corn and oats, gives the herd year-around support.

Consider George Higby—

Higby, located at Turin, has found two ways to get paying crops off land that previously had been unprofitable. By digging a series of ditches, as a cooperator with the Lewis County Soil Conservation District, he has converted a 30-acre bog, that was of no value to him, even in dry years, into a unit of high-yielding grass and grain which supports 40 Jersey milkers and 30 young animals. The drainage cost Higby $800.

Selective cuttings from 200 acres of farm woodlot, yielded the lumber for a shelter house, dock and float for his farm pond, and for improving a shed to house young dairy animals. On top of that, Higby has a 1930 planting of seedlings from which he is ready to make a cutting of marketable pulpwood, 20 cords to the acre.

High above Lake Cayuga, on the Ulysses plateau, another farmer, Del Hammond is reclaiming a farm that was rated among the very best in the county a hundred years ago. He expects to reach his goal in 5 years.

Through neglect and abuse, Hammond's farm was in pretty bad shape when he took over in 1946. Production was close to a complete washout. Working with a complete conservation plan, developed with the help of the Tompkins County Soil Conservation District, he has boosted yields 100 to 200 percent. From 25 bushels per acre, wheat has gone to 50. Well fertilized corn produced 40 bushels per acre in 1949; now he's getting 100. Last year he filled a 140-ton silo from 7½ acres of corn. Hay production, once ½ to ¾ ton, has jumped to 3 tons per acre. He carries nearly three cows to an acre of pasture; grasses them in rotation on small stripped fields. One choice strip provides 10 days' grazing, a fresh tenth being pastured every day.

There are 86 acres of strips in crops and grassland—72 on contour and 14 in even-width field strips. Forty to 50 tons of lime and 12 to 15 tons of fertilizer are applied annually. There are cover crops and rotations, and many acres of wasteland have been turned into high production through clearing and renovation.

I visited Ken Jenkins, near Wyoming—

Early in the depression, Ken Jenkins quit his bank job and returned home to help his father struggle with a rundown, 300-acre hill farm. The place had been taken over by sorrel, milkweed and moss, and was heavily saddled with debt. He tried poultry, dairying and cash crops, but it was no go. Five years of successive flash floods helped sap the soil's fertility.

Then came the new ideas—brought by SCS technicians, the Attica CCC camp, and the Wyoming County Soil Conservation District. Beans, sheep and poultry disappeared. Grasses and legumes took their places. Dairy cows returned. The herd has grown to 70 animals, and a start has been made with 50 beef cattle. Corn and oats are on their way out; certified birdsfoot trefoil, brome and

Enoch Christensen (left) and Leverne Stark, of SCS.

Charles Zimmer in hayin' time.

wheat seed are filling gaps. New life has come to the orchards. Grazing is in rotation, on strips. Now Jenkins has full grazing seasons, year after year.

Further evidence—

John Kovac, of Cherry Valley, took over a once highly productive 200-acre farm that had been sabotaged through years of neglect and abuse. The situation appeared so hopeless that he was not required to make a down-payment.

Now, after 8 years of conservation, Kovac no longer buys hay and grain for his livestock. He's producing all he needs for a larger herd. From a start with beef culls—16 milkers and no young stock—he has built a mixed herd of 26 milkers and 10 young animals. His first cow-testing report showed a herd average of less than 5,000 pounds per cow per year. Now it is 9,000 pounds. Per acre grain yields average 50 bushels in oats, 45 in wheat and 150 in ear corn. First cuttings of grass fill a 250-ton silo.

From farm earnings John Kovac paid for his farm and a fleet of good equipment, put his buildings in good shape, sent two daughters through college. Since the start, he's been chairman of the Schoharie County Soil Conservation District, "without which," he comments, "Schoharie agriculture would be in a pretty bad fix."

Here's an interesting case—

Tom Utter, dairy and poultry farmer on Lake Waneta, worked hard for 10 years, without progress, trying to reestablish the productivity of his 105-acre farm that had been neglected through years of tenancy. Finally, he established a complete conservation plan, at a total cost of $1,324, for extra hired work. His plan licked erosion and permitted him to rebuild fertility. His grass and grain production almost completely supports his dairy herd of 26 head, including 14 milkers which produced 139,206 pounds of milk in 1952. His 600 laying hens produced 10,000 dozen eggs for market last year.

Important to his farm's recovery, Tom Utter says, are 60 acres of contour strips, 6,400 feet of diversions and open ditches with safe outlets, 2,025 feet of tile drains, 30 acres cleared and developed for pasture, rotations and cover crops. He carries 14 milkers on less than 7 acres, and cuts 2½ to 3 tons of hay per acre. All farm work is handled by Utter and one year-around hired man who has been with him nearly 25 years. A terrific comeback as a result of scientific land use and treatment!

In the late 1940's, Charles Zimmer, dairy farmer near Owego, couldn't produce enough grass, corn for silage and grain on his 138-acre farm to carry his 20-head herd through winter. He rented 12 more acres, but still couldn't fill the hay mows and silo, still had to buy a lot of grain. But in 1953, with a second silo, and a larger barn, he produced so much hay, and corn for silage, that he couldn't jam all of it into his storage space! He's taken a healthy slice off his bill for bought feeds.

What caused this difference in his situation? The answer can be seen on a 34-acre hillside field. Erosion and depletion of fertility had made it unproductive. It had grown up to weeds, brush and tough wiry grass. It contained hedges, stones and brambles.

Today this field is operated as one unit, 1,900 feet wide and 1,600 feet deep, brought in full use and production through conservation practices established in cooperation with the Tioga County Soil Conservation District. The cash cost was $200.

More than 4,600 feet of diversions and outlets and 46 acres of contour strips help Zimmer get full value out of lime, fertilizer and manure. He's producing three times as much grass per acre, and twice as much corn silage as he did a few years ago. His 24-head herd is yielding 16,000 pounds of milk monthly as compared with 7,000 a few years back. He's now ready to handle and support a herd of 30. Here, again, conservation planning wins!

After 17 years of outstanding success in "gentleman" farming near Washington, D. C., and in Long Island, Maryland and North Carolina, Enoch Christensen went to Chenango county in 1945 and bought a 440-acre hillside farm in Unadilla valley, largely because it resembled rural landscape in his native

Denmark, and because a realtor told him that "those hills are full of gold." All but 40 acres were in steep hillsides.

Enoch promptly put 90 grade Holsteins, including 70 milkers, to work in the hilly pastures. By 1949 he was so disgusted with results that he sold the herd at auction and began to look around for something that could be done on "gold" laden hillsides, grown up to brush and tough, wiry grass. The Chenango County Soil Conservation District showed him how the trick could be done. Already he has cleared and developed 90 acres of pasture and hay land, is preparing to do the same work on 70 more. Diversions and outlets protect his hill land.

The clearing and renovation, including use of lime and fertilizer and herd manure, is producing all the hay and pasture he needs. Sixty rented acres are in oats. In 1951 and 1952 he bought only a little grain.

This production has enabled Enoch to get back into the dairy business with 110 registered Holsteins, including 60 milkers. He aims at 70 milkers in 125-head. The "gold" is coming out of the hillsides in the form of more and more milk. It's in terms of such annual production from an average 52 milkers, in the last years, as: 376,109 pounds in 1948, 448,168 pounds in 1949, 579,165 pounds in 1950, 602,514 pounds in 1951 and 603,700 pounds in 1952.

At the same time his grain cost in producing 100 pounds of milk was being slowed down this way: $1.97 in 1948, $1.30 in 1949, $1.13 in 1950, 83 cents in 1951 and 80 cents in 1952. The cause of this outstanding yearly success, Enoch Christensen says, is "high quality forage from improved pastures and hay lands." One month of increased milk production, he declares, has paid for all of the $1,000 worth of work done with farm labor and equipment. He values "pasture like I now have," at $70 per day.

These are but a few of the farmers in New York State who are in business today only because they have learned to use their land within its capabilities and treat it according to its needs. They have been supported in their efforts by their soil conservation districts.

LAKE HERE TO STAY

(Continued from page 135)

"Conservation," the city manager reminds us, "is a continuing job. You can never say that you are finished. We started out in 1950 with a 5-year plan. We'll complete our program ahead of schedule. But we can't stop then. Various jobs will crop up from time to time and there will always be maintenance work."

Other cities, with a similar reservoir problem, have their eyes on thriving Shawnee. Some municipal officials have toured the Shawnee Lake watershed to observe conservation and its effects. City Manager Moran invites others to do likewise. He believes that Shawnee may be setting a pattern for other communities throughout the country.

TELLING THE YOUNG.—Mrs. Clara McCabe, Calhoun (S. C.) County librarian, is shown here receiving a gift of soil and water conservation literature from H. C. Geiger, Supervisor of the Calhoun Soil Conservation District, as an activity in the district's program for greater service.

The purchase of the literature was made from district funds to which Supervisor Geiger made a large personal contribution.

"I don't have any children," Geiger said, "and I want to make a contribution so that other children may develop an appreciation of our natural resources and learn in their youth the necessity of conserving the soil and water."

Local business firms who purchased affiliate memberships in the district's program helped provide the money used to purchase the literature.

O. H. Weinges, heading the district's educational advisory committee says this is another way in which groups, individuals, and organizations can help get conservation before the people.

Mrs. McCabe is enthusiastically getting the literature ready for use among school children and is serving as member of the educational advisory committee.

H. C. Geiger presents a lot of good reading matter to Mrs. Clara McCabe, county librarian.

REVIEWS

A COMPREHENSIVE AGRICULTURAL PROGRAM FOR PUERTO RICO. Nathan Koenig, 299 pp. Illus., 1953, Washington, D. C.: U. S. Government Printing Office, $1.75.

The most important aspect of this lusty new publication is that it combines the thinking of a great many individuals, representing various agencies of the Government of Puerto Rico and the United States Department of Agriculture. It is intended to summarize the overlapping studies of some 100 technicians on the island, working through 14 so-called task forces. Out of their information and recommendations Nathan Koenig has shaped a report which offers an exceptional and convincing degree of perspective. It is readable, well organized, amply illustrated, and pleasing to the eye. It is calculated to point a way to rural progress for a people beset with a multiplicity of terrestrial and economic problems.

Contoured pineapples in Puerto Rico. (Photo by Forsythe.)

More than 2 million people live on less than 3,500 square miles. There is more wall than floor to the usual Puerto Rican farm. Much of the land, therefore, has gone to pot as a result of erosion. And it is the land that holds the people's destiny. On its use, its treatment, depends the future. There is general agreement on this point. There is also general agreement that present use is at fault, that the whole agricultural economy needs revamping, that marketing and distribution of the land's products need improvement.

The Koenig report is both realistic and humanitarian. It keeps foremost the welfare of the individual. The sequence of the opening chapters runs: The People and the Land, These are the People, This is the Land. Chapter IV, the first of the brass-tack sections, deals with The Problem of Soil Erosion; the next chapter concerns itself with Use and Control of Water. Thus, at the outset, are marshaled the fundamentals, in order of importance. The remainder of the report puts the flesh on the bones. We are told of the opportunity for improvement and expansion of grassland farming, of the necessity for reversing the history of waste of forest resources, of the challenge to reclaim land which otherwise will lie idle.

There is much forward progress noted in the realm of agricultural credit and finance. Supervised credit on reasonable terms is provided eligible farmers for the acquisition, development, and operation of their farms. But there is a greater demand for family-type ownership loans in

Cutting sugarcane, leading crop. (Photo by Agr. Ex. Serv., University of Puerto Rico.)

Typical tobacco farm. (Photo by Agr. Ex. Serv., University of Puerto Rico.)

Puerto Rico than present funds permit. The report suggests greater participation in the farm-mortgage program by private banks and other local financial institutions. Crop-insurance, too, plays an important role although it is now available only to coffee growers.

In dealing with the potentials, Koenig emphasizes the desirability of substituting "improved techniques of production for outmoded traditional methods" and sees the necessity of some shift in land use. Each acre calls for reexamination as to its use and treatment. A vast store of information is available from the Puerto Rican agricultural experiment stations and other sources and is waiting to be applied. Notwithstanding its availability, and the fact that considerable progress has been made, particularly since the establishment of soil conservation districts, the big task of improvement is still ahead. Sugarcane is the major crop, and sugarcane farmers have advanced more than other farmers, but even these producers are not getting the yields that are possible. Koenig holds that with increased yields of sugarcane per acre, the marketable tonnage of sugar could be harvested from less land and a large acreage could be released for other agricultural purposes. He suggests a new pattern of production geared to the needs of the *total* market, both export and domestic. As of now, the emphasis is largely on production for export.

Far too scant attention has been given to the problems of organization and marketing of Puerto Rican produce. There is an excess of intermediary handlers. High markups are the rule. Retail outlets are innumerable and most of them handle small sales volumes. Expensive inefficiencies prevail in distribution.

It is well to have such realistic and factual information in such convenient and understandable form. It comes with a supporting body of detail, and carries the ring of authority. This is the first time, it is said, that so extensive and up-to-date a picture of the Puerto Rican agricultural situation has been developed in a single volume. The picture is not wholly dismal. It has its lights as well as its shadows. And because the book is so well written, it will be read.

There is a good deal of common-sense talk. For example:

"But irrespective of what any or all of the governmental agencies may do, the success of a program for agriculture has to be measured against what is actually accomplished on the land and among the people themselves. Without the necessary cooperation from farmers and others, little progress can be made. But if people are to cooperate they must have an understanding of purposes and objectives and need, also, the leadership that will guide and inspire them into action.

"Experience in working with rural people has demonstrated that the best and most effective kind of leadership is that which comes from among the people themselves in their own communities. It is such rural leadership that makes it possible to organize for action from the bottom up."

There are ideas here which ought not to be allowed to gather dust.

—Wellington Brink

THIRD LAND SCHOOL ANNOUNCED.—Oklahoma City will again play host to farm youth and adults from at least 20 states at the third annual national land-judging contest and land-appreciation school next spring. Contest dates are April 29-30.

Cash awards totaling $1,800 will be paid winning 4-H and FFA teams and individuals. This year for the first time regional awards amounting to $400 will be paid top FFA and 4-H teams in each of the four regions of the country. Top team in each division will receive $50. This will be in addition to the $1,400 regular prize money paid highest placing teams and individuals.

Details of the contest were announced by Sandy Saunders, WKY Farm Director, and Edd Roberts, Extension soil conservationist, following a meeting of the contest committee. First place teams will receive $250. High individuals get $50.

There will be separate judging divisions for adults, with women competing in a class of their own. Plaques and trophies go to adult winners.

Another free barbecue and entertainment will feature the 1954 event. Last year more than 2,000 contestants from 16 states participated in the judging, and officials expect a sizable increase next April.

Sponsored by the Oklahoma Publishing Co., this novel method of judging land has spread to several other states and to a few foreign countries. It is developed on the theory that land can be judged just as cattle are judged, and boys are taught to look for and recognize certain physical characteristics of the soil just as judges do in livestock.

Any county or parish in states outside Oklahoma can enter one FFA and one 4-H team. Further information may be had by writing Edd Roberts, Stillwater, Okla., or Sandy Saunders, WKY, Oklahoma City, Okla.

—Edd Lemons

Public Library
Detroit, Mich.
General Information
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